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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/665,339 | 09/19/2003 | Leonid B. Glebov | UCF-397CIP | 7045 |

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| EXAMINER | |
|---|---|
| ANGEBRANNDT, MARTIN J | |
| **ART UNIT** | **PAPER NUMBER** |
| 1756 | |

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/665,339 | GLEBOV ET AL. | |
| | Examiner | Art Unit | |
| | Martin J. Angebranndt | 1756 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *6/27/06*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The response of the applicant has been read and given careful consideration. Responses to the arguments are presented after the first rejection to which they are directed. Rejections of the previous office action not repeated below are withdrawn based upon the arguments and amendments of the claims.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The applicant does not have a basis for "approximately 100%", but doe shave a basis for - - approximately 90%- - on page 12 of the specification.(claims 1, 15, 23)

The applicant does not have a basis for limiting contaminants, such as iron or heavy metals for all composition, only the specific composition described on page 12 of the specification. (claims 1, 13, 15, 23)

Any subject matter not found to be supported by the specification must be removed in the next response.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-12 and 15-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1,23, should the "restoring " actually be - - replaying- - ?

Claim 15 needs to recite a UV source.

Claim 23, should replace ionizing radiation with "UV" in line 6 to make it compatible with the remainder of the claim.

"modulation embraces any change in refractive index (continuous or stepwise), please delete - -and an increment of refractive index respectively" as it makes no sense and may be somewhat redudant.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 13 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Araujo et al. '404, in view of Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) and Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998).

Araujo et al. '404 teaches the heating of the glasses to 450-650 degrees C is disclosed in table I and the use of mercury arc lamps as the light darkening source and various lasers including krypton ion lasers operating at 480, 531 and 570 nm as the bleaching light source is taught in table II. The darkening of the glass is disclosed as causing color center formation (9/56-10/16). The treatment of the bistable photochromic glass to make the images stable is disclosed. (16/61-17/11).

Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) in the abstract describes the exposure of a color center forming glass to gamma or UV radiation to form color centers, followed by the decolorization using 632.8 nm (HeNe) interferometric exposure to form a hologram followed by heating.

Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998) describes a glass is described composed of sodium, zinc, aluminum, and silicon oxides doped with cerium, silver, fluorine and bromine which is prepared in the manner described in the experimental section. Figure 4 evidences diffraction efficiency of approximately 95% for a PTR glass which has been exposed at approximately 0.5 J/cm$^2$ (500 mJ/cm$^2$) using exposure to UV light from a HeCd laser. Figure 5 evidences increased refractive

index modulation as a function of the duration of heating for an exposure of 64 $mJ/cm^2$ with heating at 520 degrees for up to 200 minutes. The examiner notes that figure 5 evidences a 275% increase in refractive index modulation at 200 minutes, compared with 50 minutes. The examiner notes that the first data point of figure 4 seems to correspond to the second data point of figure 5 and that one expects that the diffraction efficiency of the 64 $mJ/cm^2$ exposure with a heating of 200 minutes at 520 degrees C would have a high diffraction efficiency similar to that achieved by the higher exposures with heating for a shorter duration. The use of exposures in the range of $50mJ/cm^2$ to $5J/cm^2$ is disclosed on the second page. The use of DTA analysis of all the samples and the annealing of the variously processed samples is disclosed on the second page. Note that the disadvantages of references 1 and 2 apply only to the processing of the materials.(first page)

It would have been obvious to one skilled in the art to modify the process of Araujo et al. '404 by using two overlapping beams from the disclosed Krypton ion lasers to form a bleached holographic pattern in the color centers based upon the teachings of of Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975)(Abstract only), to use the high purity materials developed by Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998) and to stabilize the resulting holographic images through the thermal treatment as taught by Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998), who also teaches that holograms in PTR materials such as those of Araujo et al. '404 are desirable.

In response to the arguments, the examiner holds that the glass used in the Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998) meets the high purity requirements and the incorporation of this reference addresses that concern. The use of the thermal development and the high powered Kr ion laser (~10-15 W) and the high diffraction phase holograms formed by Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998) addresses the concerns that the applicant has relating to the formation of an absorption hologram, rather than a phase hologram.

9. Claims 1-13 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Araujo et al. '404, in view of Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) and Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998), further in view of Gaissinsky et al. '509.

Gaissinsky et al. '509 in example 4, which makes a trademark by exposing a photochromic silver halide glass blank to 530 nm NdYAG followed by heating, followed by simultaneously 532 and 351 nm exposure, heating and cooling. [0114-0115]. The power is 10 mJ with a pulsewidth of $5 \times 10^{-12}$ sec, which is in excess of 100MW [0113], which with minimal focusing this would exceed 10 $GW/cm^2$.

It would have been obvious to modify the process of Araujo et al. '404 combined with Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) and Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998) by using a

more powerful laser, such as the pulsed YAG taught by Gaissinsky et al. '509 for use in writing data into silver halide glasses, in place of the Krypton ion lasers, to shorten the exposure time.

In addition to the response above, the examiner notes that the material used in all the references is a silver halide glass and that the Gaissinsky et al. reference does use this with both a visible and UV exposure, therefore while the result may be different from that achieved by Araujo et al. '404, Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975) or Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998) may be different in terms of the microstructure, these are all imaging processes, which use the silver halide glasses and are therefore analogous.

10. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Araujo et al. '404, in view of Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975)(Abstract only) and Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998) and Gaissinsky et al. '509, further in view of IBM Tech. Discl. Bull., Vol 31(3) pp. 18-21 (08/1988).

IBM Tech. Discl. Bull., Vol 31(3) pp. 18-21 (08/1988) teaches the use of angularly multiplexed holograms (those with two or more holograms stored therein at different angles), where the angular selectivity is such that tilting the hologram result in the light being diffracted in a different direction (see figures 2a and 2b)

In addition to the basis provided above, the examiner holds that it would have been obvious to one skilled in the art to modify the teachings of Araujo et al. '404 combined with

Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975)(Abstract only), Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18th Int. Congr. Glass pp. 1151-1156 (1998) and Gaissinsky et al. '509 to form any holograms known to be useful, including those disclosed by IBM Tech. Discl. Bull., Vol 31(3) pp. 18-21 (08/1988) with a reasonable expectation of success.

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-25 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 11261077 (no prepub). Although the conflicting claims are not identical, they are not patentably distinct from each other because they seek coverage for the overlapping processes.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

13. Claims 1-25 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-23 of copending Application No. 10834431 (no prepubs). Although the conflicting claims are not identical, they are not patentably distinct from each other because they seek coverage for the overlapping processes.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Martin J Angebranndt
Primary Examiner
Art Unit 1756

08/25/2006